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Reconstruction of dielectric constants of core and cladding of optical fibers using propagation constants measurements

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Abstract

© 2014 E. M. Karchevskii et al. We present new numerical methods for the solution of inverse spectral problem to determine the dielectric constants of core and cladding in optical fibers. These methods use measurements of propagation constants. Our algorithms are based on approximate solution of a nonlinear nonselfadjoint eigenvalue problem for a system of weakly singular integral equations. We study three inverse problems and prove that they are well posed. Our numerical results indicate good accuracy of new algorithms.

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